Scabies
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Scabies

Overview[1,2]

For a complete description of scabies, refer to the following texts:

- Control of Communicable Diseases Manual (CCDM).
- Red Book, Report of the Committee on Infectious Diseases.

Case Definition

A clinically compatible case that is laboratory confirmed.

Clinical description

Scabies is characterized by itching (pruritus) which intensifies at night. Itching is an allergic response to the mites, eggs, and feces embedded under the skin. Skin lesions may appear as little red bumps or pimples, blisters, pustules, burrows or other lesions. Lesions are seen most commonly on interdigital web spaces, wrists, elbows, anterior axillary folds, periumbilical skin, female breasts, pelvic girdle, buttocks, male genitalia, knees, and the sides of feet. A small percentage of cases may have a nodular scabies variant presenting as scattered pruritic papules or nodules of reddish-brown color, which occur particularly on the penis, scrotum, or axillae. These lesions are thought to be a manifestation of strong delayed hypersensitivity to the retained mite products, are not infectious and may take weeks or months to disappear after adequate therapy. In infants, the head, neck, palms of the hands, and soles of the feet may be affected. However, in long-term care facility residents, lesions may be more predominant on the back, buttocks, and other areas of the body of which the skin has contact with moist sheets. As the infestation progresses, skin lesions may mimic many other dermatological conditions (e.g. eczema, psoraris, pxoduina, etc.). [1,3,4,5,6,7,8,9,10]

Laboratory criteria for diagnosis

Diagnosis is based on the microscopic observation of the mite or mite products in skin scrapings.

Case classification

Confirmed: a case that is laboratory confirmed

Probable: a clinically compatible case that is epidemiologically linked to a confirmed case

Information Needed for Investigation

- **Verify the diagnosis.** Determine if skin scrapings were performed and are positive for scabies.
- **Establish the extent of illness**. Determine if household or other close contacts are, or have been symptomatic.
- **Contact the District Communicable Disease Coordinator** if an outbreak is **suspected**, or if cases are in high-risk occupations or settings such as nursing homes, child care, or health care facilities.
- **Contact the Bureau of Child Care** if cases are associated with a child care facility.

Case/Contact Follow Up And Control Measures

1. As soon as a case of scabies is suspected or identified within a health care facility, a contact identification list/linelist (see Appendix C) should be developed **(**include the case's name, room and bed location, date of onset of symptoms, date and results of skin scrapings, and dates and results of initial and follow-up treatments). This list should identify every resident/patient, health care worker, visitor, and volunteer who may have had direct skin-to-skin contact with the case within the previous two months. If more than one symptomatic case is identified, a separate contact list for each case may be required. Initially, the contact identification list should be limited to the nursing unit where the case resides. [3,11]
    - Surveillance by direct observation should be done to identify symptomatic patients/residents likely to have been exposed to scabies.
    - Surveillance by interview, self-administered questionnaire and/or direct observation should be done to identify all employees, including laundry personnel, volunteers, as well as family members likely to have been exposed to scabies.
    - Ascertain the epidemic level, which is the proportion of affected persons with positive scrapings or symptoms. Accurate diagnosis, coupled with safe and effective therapy, is needed to control a potential epidemic. The decision to treat the unit or the entire facility will be based on this and additional information, which is obtained by determining the number of affected persons within the entire facility's population. Examples of epidemic level criteria would include: 1) two or more residents who are not roommates, 2) one resident and one employee, or 3) two employees.
2. Health care staff may be allowed to return to work following appropriate and effective treatment.

Control Measures

See the Scabies section of the Control of Communicable Diseases (CCDM), "Control of patient, contacts and the immediate environment".
See the Scabies section of the Red Book.
See "Guidelines for Scabies Prevention and Control" by the Section of Communicable Disease Control and Veterinary Public Health.

Control measures in health care facilities should include:

- Early diagnosis and treatment of infested individuals and contacts are extremely important.
- Routine examinations of skin, hair, and nail beds of patients and a thorough examination of hall new residents will aid in keeping this infestation at manageable levels. All skin rashes must be diagnosed and investigated.
- Symptomatic residents should be placed in isolation for the duration of the first treatment period. If Norwegian scabies are present, the case must be isolated until two negative scrapings are obtained.
- Health care providers should wear appropriate protective clothing while applying the scabicide. The cuff of the gloves should cover the wrist of the gown. Gloves and gowns should be properly discarded after completion of the treatment tasks. Wash hands immediately after discarding the gown and gloves prior to beginning the treatment process on the next resident.
- Medication is removed whenever the hands/skin are washed and needs to be reapplied.
- Visitors must wear appropriate protective clothing, such as gloves and gowns, during the treatment period.
- Bed linens, towels, and clothes used by the infested resident within 72 hours prior to treatment should be laundered and dried on the hot cycle for 20 minutes or sealed in a plastic bag for 7 days. Those items that cannot be laundered should be dry cleaned or sealed in a plastic bag for 7 days. Insecticide sprays or "bug bombs" are not required or recommended.
- Disinfect the mattress, pillow covers, bedside equipment, floors, and other equipment, such as treadmill belt and blood pressure cuffs, after the treatment period. If floors are carpeted, vacuum and discard the bag when finished.
- Discard any creams, ointments, or lotions that were used previous to the treatment period by the cases.
- Health care staff may return to work after completion of appropriate treatment.

Laboratory Procedures

Skin scrapings must be examined by a CLIA certified laboratory technician.

For suspected outbreaks, skin scraping kits may be obtained from the Missouri State Public Health Laboratory (SPHL). When skin scrapings have been transferred to a glass microscope slide, a cover slip must be placed on top of the specimen and sealed to the slide with clear fingernail polish or petroleum jelly. Complete the laboratory report form and return the kit to the SPHL as soon as possible.

Reporting Requirements

A scabies outbreak is a Category II disease finding and shall be reported to the local health authority or to the Missouri Department of Health (MDOH) within 3 days of first knowledge or suspicion by telephone, facsimile or other rapid communication.

1. Complete a Nosocomial Outbreak Investigation Form (MO 580-1598) including the linelist located at the back of this section.

2. Within 90 days of the conclusion of an outbreak, submit the final outbreak report to the District Communicable Disease Coordinator.

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Scabies
Fact Sheet

What is scabies?
Scabies is a highly communicable disease caused by tiny human mites burrowing under the skin to lay eggs. Scabies causes intense itching, and a red, generally raised skin rash. Itching is most intense at night. The rash can start anywhere on the body (generally the face is spared) and continues to spread over time until appropriately treated.

Who gets scabies?
Anyone can get scabies. Scabies affects all persons regardless of economic status, color of skin, age, or standard of personal hygiene.

How is scabies spread?
Scabies are passed from one infested person to another most commonly through direct skin to skin contact. Occasionally, scabies can be transferred from undergarments, bedclothes, or bedding of an infested person.

What are the symptoms?
Itching and scratching, especially at night. The rash can look like many other skin problems, (eczema, dermatitis, poison ivy or oak, even chickenpox). Sometimes secondary bacterial infections occur as a result of the constant scratching that leads to bleeding and/or abraded skin that allows entry of bacteria.

How soon do symptoms appear?
For persons getting scabies for the first time, itching and the rash can take up to eight (8) weeks to appear. Normal range is 2-6 weeks.

For a person who gets reinfested with scabies, itching and rash will occur within one to four days.

How long can a person spread scabies?
The scabies mite is transferred most commonly by skin-to-skin contact with an infested person. Therefore, persons who are yet to show symptoms can transfer the mite prior to their knowledge of having scabies. This is why outbreaks of scabies can occur within institutions like long term care facilities.

How is scabies diagnosed?

Because the rash caused by scabies can look like many other types of rashes, diagnosis is important and easily achieved by performing skin scrapings. A nurse, nurse practitioner, or physician may perform this procedure. Once a person is found to have scabies, it is important to check all household members and close contacts for rashes.

What is the treatment for scabies?

A medicated lotion or cream, known as a "scabicide", which must be prescribed by a physician, is required to effectively treat a person with scabies. This lotion or cream must cover the entire surface of the skin (generally from the tips of the earlobes to the ends of one's toes). Second and sometimes a third application may be necessary to adequately treat a person. Scabicides are pesticides and must be used with caution. Products containing topical 5 percent permethrin are considered safer than products containing lindane. Oils may enhance the absorption of lindane. Therefore the simultaneous use of creams, ointments, and body lotions must be avoided if a scabicide containing lindane is used.

When a family member is found to have a rash caused by scabies, all household members should be treated at the same time. Laundering of bed linens, bedclothes, and clothing worn in the past three days must occur prior to reuse by anyone.

Do I need to treat furniture, other household items?

Vacuuming of upholstered furniture, rugs and other unwashables in close contact with the infested person is recommended. It is not necessary to clean walls or curtains.

For items that can not be washed, either dry clean or place in a plastic bag and seal for 10 days.

Following treatment will itching cease?

Itching may continue for two or more weeks following treatment. Scabicides are very drying to the skin plus the body must absorb eggs and fecal pellets left by the scabies mites under the skin. Application of skin lotions and bath oils aid in minimizing dry skin.

Missouri Department of Health
Section of Communicable Disease Control and Veterinary Public Health
Phone (800) 392-0272

MISSOURI DEPARTMENT OF HEALTH
SECTION OF COMMUNICABLE DISEASE CONTROL AND
VETERINARY PUBLIC HEALTH

NOSOCOMIAL OUTBREAK REPORT FORM

PO BOX 570
JEFFERSON CITY , MO 65102
(800)392-0272 OR
(573/751-6113

REPORTED INITIALLY BY

NAME	TITLE	
ORGANIZATION	DATE/TIME	TELEPHONE NUMBER
TO NAME	TITLE	
ORGANIZATION	DATE/TIME	TELEPHONE NUMBER

REPORTED TO

LOCAL CO/CITY HEALTH DEPT. ☐ Yes ☐ No DATE _____ TIME _____
DISTRICT HEALTH DEPT. ☐ Yes ☐ No DATE _____ TIME _____
COMMUNICABLE DISEASE ☐ Yes ☐ No DATE _____ TIME _____
DIVISION OF AGING ☐ Yes ☐ No DATE _____ TIME _____

DEPT. OF MENTAL HEALTH ☐ Yes ☐ No
DATE _____ TIME _____

1. Name of Facility

Contact Person/Position Title

☐ Hospital ☐ Mental Health
☐ Nursing Home ☐ Rehabilitation

Address (Street or PO Box, City, State, Zip Code)

Telephone Number

2. Number of Cases and Number of Exposed at Each Location, Service, or Nursing Unit

	No. Cases		No. Exposed		No. Cases		No. Exposed		No. Cases		No. Exposed	
	Residents	Employees	Residents	Employees	Residents	Employees	Residents	Employees	Residents	Employees	Residents	Employees
Medical Units	Unit				Unit				Unit			
Surgical Units	Unit				Unit				Unit			
Intensive Care Units	Adult/Type				Pediatric/Type				Newborn/Type			
Obstetrics	L & D				Post Partum				Newborn			
Rehabilitation	Unit				Unit				Unit			
Mental Health	Unit				Unit				Unit			
Long Term Care	Unit				Unit				Unit			

Illness/Disease	Date First Case Starting Outbreak	Date of Case Causing Outbreak to be Reported	Date of Last Case

3. Principal Symptoms/
Onset Dates

4. Microorganisms:
A. Specimen Source/
Collection Date

Findings:

B. Laboratory Name
and Address

5. Total Number of Cases >	Residents	Employees	As of Date

6. Control Measure(s) Instituted

AN AFFIRMATIVE ACTION/EQUAL OPPORTUNITY EMPLOYER - Services provided on a nondiscriminatory basis

Dear Parent:

Recently, several cases of scabies (a mite that burrows under the skin) have occurred in the _____.

In an attempt to control the spread of scabies, screenings will be done on __/__/__ at the school/child care facility. Visual inspection as well as skin scrapings of suspected areas will be done by qualified staff. If you do not wish to have your child screened, please have him/her seen by a physician. The physician must provide a written release pertaining to your child before he/she can return to school/child care facility.

We hope to halt the spread of scabies by screening and early treatment, if indicated.

Your cooperation is appreciated.

Please sign below and return this letter to the school/child care facility by __/__/__.

If you have any questions, please call the _____.

_____ __/__/__
Parent's Signature Date
Permission for Screening

MISSOURI DEPARTMENT OF HEALTH
SECTION OF COMMUNICABLE DISEASE CONTROL
AND VETERINARY PUBLIC HEALTH
GUIDELINES FOR SCABIES PREVENTION AND CONTROL

Introduction

Since 1989, approximately 90 clusters or outbreaks of scabies have been reported to the Bureau of Communicable Disease Control. The majority of these reports have come from long term care facilities (LTCF's), although there are occasional reports from hospitals, day care centers and schools. Requests for assistance in resolving outbreaks in some LTCF's have uncovered probable scabies infestations lasting a year or longer. We have had reports of symptoms developing ten days following exposure; however, most cases have an incubation period of four to six weeks for a primary infestation.

A long incubation period (during which time the mite { sarcoptes scabiei var. hominis} is able to be transmitted to close contacts) and a wide variety of presentations are problematic in getting an accurate diagnosis. Because scabies can present with burrows, papules, scales, vesicles, bullae, crusts, pustules, nodules and excoriation's, it is necessary to do a careful history followed by burrow identification and skin scrapings for the mite, its eggs or fecal pellets. The following are recommendations for prevention and control of institutional scabies.

A. **Scabies Prevention Programs in Health Care Facilities Require That**:[1]

1. Health care workers be suspicious of scabies in person with a rash or pruritus that has gradually gotten worse, particularly during the night time hours;

2. Health care facilities establish a policy of examining newly admitted person for scabies and questioning new employees for either exposure to or symptoms of scabies;

3. The diagnostic skills of a consultant experienced in recognizing scabies be used in evaluating difficult or unusual cases;

4. In-house competence in preparing and examining skin scrapings from suspect person be developed;

5. Protective clothing and gloves be used when providing hands-on care t o persons suspected of having scabies;

6. A system for recording edpidemiologic and clinical information on suspect and confirmed person be established.

B. **Equipment Needed for Skin Scraping:**

1. Gloves
2. Magnifying glass
3. Gooseneck lamp
4. Felt tip pen—green or blue washable ink
5. Alcohol swabs
6. #15 scalpel blades, glass slides for scraping or curettes
7. Scalpel holder (optional)
8. Kelly clamp or other forceps (optional)
9. Slides and cover slips
10. Mineral oil or microscope immersion oil
11. Requisitions, if slides are being sent to a public health laboratory
12. Sharps container
13. Clear nail polish or petroleum jelly (to help seal the slide cover to slide)

C. **Procedure for Doing Skin Scrapings:**[1,2]

1. Establish and confirm the diagnosis by skin scrapings and microscopic identification of mites, eggs or scybala (fecal pellets). A nurse from the facility can be taught this procedure by a dermatologist, the consulting physician or a by a nurse or technician who has had professional training in doing the procedure.
   a. Mass treatment (treating all person residing or working on a unit or in an entire facility) should not be initiated unless a definite diagnosis has been made in at least 1 of the symptomatic cases.[1]
   b. Scrape those persons with the most severe rash first. Elderly ma present with severe urticaria and bullous lesions.
   c. Shoulders, back and abdomen are choice areas for scrapings in the elderly.[2] Other sites: hands, wrists, elbows, feet, ankles, buttocks, axillae, knees, thighs, and breasts.
   d. Use hand-magnifying lens to identify recent burrows or papules. Look for non-excoriated, non-inflamed areas. A bright light and a magnifying glass may assist in visualizing the mite at the end of the burrow.
   e. Identify theses high yield lesions by applying mineral oil (best used over dry scaly areas) or by applying the burrow ink test to possible burrows. The burrow ink test is done by using a wide felt tip pen (blue or green are best) over burrows and then wiping off with an alcohol swab. The alcohol will remove most surface ink, but will not remove the ink taken up by the burrow, thus leaving a dark irregular line.
   f. Apply mineral oil or preferably microscope immersion oil to lesions or scalpel blade and glass slides.
   g. Vigorously scrape uninfected burrows and papules with a #15 scalpel blade or glass slide held at a 90° angle to the skin and while

holding the skin taut until the statum corneum is removed.[2,3,4] Scrapings may also be done without a holder for the #15 scalpel blade. The blade is held y the fingers at an angle that is more like 45° to the skin. (Vigorous scraping appropriately results in a few red blood cells visible under the microscope, but there should not be frank bleeding.) Some practitioners prefer using a small curette. Change blades or curettes between scrapings on different persons. Blades can be placed and removed from the handle with a forceps. Used blades must be placed in a sharps container.

h. Transfer skin scrapings from 6 different sites to a single slide or to 6 different slides per patient.[2] These scrapings can be pushed onto the slide edge and them moved to the center of the slide.

i. Place a cover slip over the slide.[2]

j. Examine entire slide me thodically under low power at 25-50-x magnification for at least 5 minutes.[1] Low power (2.5-4 x) is useful initially. The microscope should be taken to the facility; however, if the practitioner is not trained in reading the slides, the cover slip should be secured to the slide at all edges with clear nail polish or petroleum jelly and transported personally, by courier, or by mail (in a secure mailer) to:

   1) Missouri State Public Health Laboratory (MSPHL);
   2) A branch of MSPH
   3) A hospital or rural c linic laboratory with pre-arrangements; or
   4) A physician's office with pre-arrangements.

Public health laboratory requisitions must accompany slides if readings are to be done at public health laboratory.

D. **Surveillance and Collation of Edpidemiologic Variables for Scabies:[1,2]**

1. Surveillance by chart review, interview and direct observation should be done, using a form such as in Appendix A to identify all patients/residents who are likely to have been exposed to scabies.
2. Surveillance should be done by interview, completion of a self-administered questionnaire such as in Appendix B and /or direct observation in order to identify all employees, including laundry personnel, who are likely to have been exposed to scabies.
3. Make a line list (see Appendix C for sample line list form) of room number, age, sex, symptoms, date of onset for:

   a. **Symptomatic persons with positive scrapings;** differentiate between conventional and Norwegian (keratotic or crusted) scabies.[1,2,5] (See Appendix D for "Definitions of Scabies Infestations").

   b. **Symptomatic person with negative scrapings.**

   c. **Asymptomatic contacts** of a symptomatic case. These contacts should be on a totally separate line list. Close contacts are person

who have skin to skin contact, sleep in the same bed or handle infested clothes and bed linens. Contact of crusted scabies should be designated High Risk, Low Risk and No Risk per definitions on page 10.

d. Contract tracing should go back 2 months.

4. Ascertain the epidemic level: proportion of affe cted person (positive scrapings or symptomatic) .[1] This information will determine whether person in the whole facility or just one section are treated.

   a. Determine percentage of affected person (patients or residents) within the entire facility's population of patients or residents.
   b. Determine percentage of affected employees within the entire facility's employee population.
   c. Determine percentage of affected person within each subgroup of a population; i.e., nursing home wing, hospital department.

5. Look for similarities or groupings in age and sex among affected persons.[1]

6. Ascertain type and frequency of secondary bacterial infections.[1,5]

7. Determine the mode of transmission; i.e., employees having close personal contact like bathing, bedmaking, applying skin lotions, frequent lifting/repositioning of patients[1,2]

   Or

   exchanging clothing, sleeping on same linens, playing games involving close hand or skin contact[1,2]

   Or

   sexual contact.[1,2]

E. **General Recommendations**

1. Report outbreak to the local health department using an outbreak report form, Appendix E. Do not use separate CD – 1 cards for every case in an outbreak.

2. Notify facilities to which potentially infested patients or employees have transferred.[1,8]

3. Intensive educational programs should be given to all employees.[1] They should be given a Fact Sheet on Scabies.

4. Scrapings need not be done on every symptomatic person in a large outbreak, but an effort should be made to scrape all persons having numerous lesions and symptoms of long duration.

5. Allocate sufficient personnel and funding to initiate and manage follow-up treatments. Facility should purchase enough medication to treat symptomatic persons (patients/residents, employees, volunteers and family members) and their close contacts.[1,2]

F. **Selective Treatment Protocol[1]**

1. A conventional scabies treatment regimen can be selective when only 1 person has a positive scraping and 1 –2 others on the same unit are symptomatic but have either not been scraped or have negative scrapings. Selective treatment protocol can be used.[1] If a scraping is positive for a person who is severely immunocompromised or for a person who has crusted scabies, then the potential for spread is greatly increased and selective treatment protocol will probably not prevent further cases. (See G-3 and Appendix D, "Definitions of Scabies Infestations").
2. The diagnosed and probable infested cases and symptomatic contacts should receive treatment with subsequent monitoring for effectiveness of treatment. A skin scraping should be done on the symptomatic cases 1 month after treatment,[2] particularly if rash and symptoms persist. (See section H).
3. All "hands-on" contacts during preceding 2 months (employees, relatives and other patients) of any patient/resident with a positive scraping should be treated. Patients or residents having received "hands on" personal care from a positively diagnosed or symptomatic employee should receive treatment, as should the employee's household.[1,2,9]

G. **Mass Treatment Protocol[1,2,9]**

1. Definition: A mass treatment protocol uses the same drug regimens as in selective treatment except that all persons residing or working on a unit or in an entire facility are treated.
2. One physician should be designated as the outbreak control officer and be given authority to manage the treatment regimen of all residents in a long term care facility. At the least, all attending physicians should agree to a cooperative schedule for conventional or Norwegian scabies.[9]
3. Mass treatment should be administered within a 24-48 hour period to all persons (residing and working) in a defined area of the facility if:[2,9]

   - Two (2) or more symptomatic patients/residents or employees have positive scrapings

   Or

   - One (1) asymptomatic patient/resident has a positive scraping and many patients/residents have exhibited symptoms of infestation for months (2—10% rate of symptomatic infestation).

   Or

   - Norwegian scabies is diagnosed in one (1) patient/resident and at least one (1) employee is symptomatic.[1]

4. Mass treatment of everyone in the facility (all residents and at risk employees) should be administered within a few successive days if positive scrapings are found in 2 or more separate areas of the facility.
5. Employee cross-over should not be allowed until the specified population has been treated.
6. Household members, sexual contacts and roommates of symptomatic employees should be treated the same day as the employees.[1]
7. Write a detailed schedule of:

    a. Who will be treated and who will do the treating;
    b. What will be used for treatment, including specific instructions on how to apply lotions;
    c. Where treatments will be done; i.e., a treatment room, individual beds, at home;
    d. When treatments will be done (date and time);
    e. State when the person will be considered non-infested, can be removed from isolation and can return to work. (See Section I)

8. Write a second schedule for:

    a. Reassessment of all treated person at 14 days.
    b. Persons needing a second treatment 3—7 days later. (See section H 8-9).
    c. Persons with crusted or infected lesions needing routine daily monitoring, monthly scrapings for a few months or a maintenance monthly treatment regimen.[2]

9. Notify all families and frequent visitors about problems and need for their cooperation.[1,2]

H. **Application of Scabicides and Steroid Creams**

1. Treatment failures may occur for several reasons, the most common being inadequate application of scabicide.[1,2,5,8,9,10] Other reasons for treatment failure include:

    a. Infected or crusted lesions.[9]
        1) Keratolytic agents (20—40% urea and 6% salicylic acid) may be necessary to soften scaliness and permit penetration of scabicide.[2,5,11]
        2) Concomitant bacterial infection should be treated with appropriate antibiotics and retreated for scabies a week or 10 days later.[11]
    b. Reinfestation from untreated contacts[9]
    c. Cell-mediated immounodeficiency[1,12]
    d. Resistance of mites to the scabicide[8,13,14]

NOTE: Pruritus and rash can continue for 1-4 weeks after treatment. Pruritus and residual rash should not be considered treatment failure until 1 month after last treatment. To ameliorate these signs and symptoms, some dermatologists use 1% hydrocortisone cream or triamcinolone cream (0.1%-0.025%) applied to the most intense rash and a lubricating agent or emollient to the lesser rash for children;[15,16] 1% hydrocortisone cream or triamcinolone cream 0.1% can be used for adults as well.[15] Antihistamines are also used to alleviate the hypersensitivity response.

e. Steroid creams should not be applied until after first scabicide treatment. Topical and systemic steroids cause depression of delayed hypersensitivity and pruritus, thus allowing scabies to go undetected and transmission unimpeded.

2. Gloves and gown are worn to apply scabicides.

3. Bathe as usual and change bed linens.

4. Apply scabicide to every square inch of skin, from the posterior ear folds down over entire body, including all non-affected areas. Include intergluteal cleft, navel, crevices of contractured extremities, and webs between fingers and toes.[11] If scabicide is washed off during handwashing or perineal care, it must be reapplied.,

5. In infants, toddlers under 3 years of age, the elderly and the immunocompromised, the head (face and scalp) requires application of scabicide. Pay close attention to the area behind the ears. Do not get the scabicide near the eyes or mouth. Prior treatment failure may be an indication to include the head in other persons.[2,11,16]

   Lindane shampoo, used as directed on the label, can be used for certain persons (elderly) to treat the scalp.

6. Fingernails and toenails should be clipped and scabicide applied under nails. A small soft brush is helpful for this.[2,17,18]

7. Scabicides
   a. 5% permethrin cream (a synthetic pyrethroid)[19] Elimite is a trade name for this product. *

   - Considered drug of choice by several authorities including the 1994 American Academy of Pediatrics “Red Book” and the Medical Letter, March 23, 1990, p. 29
   - Cure rate in one study was 91%.[10,14]
   - 1 application is considered curative, although 2 applications are frequently recommended by experts for symptomatic persons.

The usual adult dose is 30 grams. A 60-gram tube should treat 2 adults. For adults, it should be massaged into skin covering the entire body (except the head) from the soles of the feet to the neck. For infants, young toddlers, and geriatric patients, it should be applied to the entire body including the scalp, neck temples and forehead because of the mite often infests these areas in those age groups. The patient should be instructed to remove the medication by thoroughly bathing 8-14 hours after application. Contact with the eyes and mouth should be voided. If contact occurs, the eyes should be immediately flushed with water. Note: Studies have not demonstrated plasma levels. The drug is rapidly broken down and is excreted in urine as inactive metabolites.[6,19]

Permethrin is safe for children 2 months of age and older. No instance of accidental ingestion has been reported. The most commonly reported side effects are pruritus, edema and erythema, which may continue for up to 2 weeks after treatment. Patients should be told that the itching or stinging of scabies infestation may continue after treatment, and should be advised to avoid repeated application of the scabicide.

Although animal studies showed no adverse effects to reproductive function or damage to fetus, no adequate studies have been done on pregnant women. Therefore, permethrin should be used during pregnancy only when clearly necessary. If treatment is necessary for lactating mothers, breast-feeding should be discontinued during the treatment period.

b. 1% lindane lotion (comes in 2 oz. bottle) is effective when applied properly.[9,11,20] The usual amount of lindane lotion required to treat one adult once is 30 grams (1 oz.).[6] Lotion bottle must be **shaken well.**

- Bathe with tepid water, not hot water, if a bath is taken prior to application of scabicide.
- Leave on for 8 hours or overnight; some physicians prefer a 12-24 hour application.[5] Most absorption of lindane occurs in the first 6 hours after application.[20]
- Avoid contact with eyes and mucous membranes.
- Not to be used for small infants, pregnant women or nursing mothers.[10,20] Use of lindane for any reason in small children is seriously questioned by the National Pediculosis Association. Lindane should be avoided in anyone with seizure disorders and in anyone with severe skin disruption (excoriated or denuded). If lindane is used for lactating mother, discontinue breast-feeding for 2 days.[6]

c. 6% precipitated sulfur in petrolatum prepared by pharmacy.[15]
- Cure rate is unknown—has not been studied, but used for centuries.
- Product is messy, malodorous and somewhat irritating.
- Apply nightly for 3 nights (wash off previous application before reapplying a new application).[15]
- Recommended in infants younger than 2 months of age and in pregnant or lactating women.[15]

d. 10% crotamiton cream or lotion (Eurax* Cream or Lotion) has an approximate 50% cure rate when applied less than 5 days,[10,20,21,22] 60% effective for full treatment.
- Cream must be thoroughly massaged into skin.
- Apply twice a day for 5 days.[10]
- Avoid contact with eyes and mucous membranes.
- Can be used on youngsters and elderly with dry sensitive skin,[5] but not denuded skin.[20]

8. Conventional scabies regimen

a. A single application of 5% permethrin cream or 1% lindane is recommended in facilities provided that application of scabicide is supervised by a professional health care worker who is knowledgeable about scabicide treatments. Several authorities claim that a single adequate application of 5% permethrin cream or 1% lindane is sufficient to eradicate conventional scabies, whether a diagnosed case, symptomatic case, or asymptomatic contact.[9,11] This has been effective in the clinical practice of treating individual families.

b. Institutional scabies has a high propensity for transmission. If supervised application of scabicide by trained employees is not possible, the following regimen is recommended:

Persons who are positively diagnosed by skin scrapings—
- 3 treatments spaced 3-7 days apart, utilizing 2 different agents[2]
- Reevaluate at 14 and 28 days.

Symptomatic cases who's skin was not scraped or scraping was negative—
- 2 treatments, 3-7 days a part.[2,5,11]
- reevaluate at 14 and 28 days

Asymptomatic contacts, include household and sexual contacts, of diagnosed or symptomatic cases—
- 1 treatment, evaluate in 14 days[2]

c. It should be acknowledged that some clinicians prefer to treat symptomatic individuals with two applications on two consecutive days.

9. Norwegian Scabies (atypical, crusted) regimen

a. Aggressive treatment over entire body.[1] (See H # 1-6)
b. 5% permethrin cream for 1 day, followed by 10% crotamiton lotion for 5 days, followed by a second 5% permethrin cream for 1 day.[2,5,8]
c. Reasses on days 7 through 14 with follow-up scrapings in one month.[2] If scrapings are positive or if symptoms unabated, treat again.
d. If treatment failure occurs several times, monthly maintenance treatments should be given for an extended period of time; (e.g., applications of 10% crotamiton lotion for 2 days each month.[2,8])
e. Protective gown and gloves are necessary until scrapings are negative on 3 separate occasions.
f. Categorize contacts by risk of mite transmission[1]
   1) High risk: prolonged or recurrent hands-on contact before initiation of patient treatment,
      - 2 treatments, 3-7 days apart.
   2) Low risk: persons having had indirect contact (touching patient's clothing or linens); a simple, brief period of direct skin to skin contact (obtaining a blood specimen, positioning a patient for radiography); or a patient who was cared for by an employee who also cared for the scabetic patient.
      - 1 treatment
   3) No risk: person having had neither direct nor indirect contact require no treatment.

10. Cleansing bath is taken when product is to be removed. Some experts do not believe it is necessary to bathe residents at designated times in order to remove scabicide. Estes and Estes suggest that an extended interval before bathing or repeated applications be considered to offset reinfestation.[6]

11. Fresh clean linens and clothes are put on after the cleansing bath.

I. <u>Isolation and Environmental Control for conventional Scabies</u>

1. Environmental reservoirs were considered to play little or no role in scabies transmission until late 1988. Since then, Arlian and colleagues have demonstrated that *S. scabiei* can remain alive for 3 days on stuffed chairs, sofas and tiled floors. He found that nymphs could survive 2—5 days at 25°C and 45-75% relative humidity. Outbreak reports implicate bed linens and clothes as probable sources of transmission.[23]

2. Isolate affected patients/residents during the treatment period or for 24 hours after initiation of scabicide such as 5% permethrin cream or 1% lindane lotion; 24 hours after last application of other scabicides; restriction of contact with other persons—restrict to room or home.[5]
3. Wear gown and gloves for skin to skin contact. Wash hands after removal of gloves.[1]
4. Bed linens, towels and clothes used by the affected persons within 72 hours prior to treatment should be placed in plastic bags inside the patient's room, handled by glove and gowned laundry workers and laundered at 50°C (122°F).[1,23,24] Hot cycle of dryer should be used for at least 10—20 minutes. Nonwashable blankets and articles can be placed in a plastic bag for 7 days or dry cleaned or tumbled in a hot dryer for 20 minutes.[26]
5. All bed linens, towels and clothes should be changed daily.
6. Multiple-use walking belts, skin creams and ointments can serve as potential reservoirs for mites. Disinfect the walking belt and discard all creams, lotions or ointments used prior to effective treatment.[25,26]
7. Mattresses, upholstered furniture and carpeting should be vacuumed.
8. Routine disinfection procedures are adequate on a daily basis.[1]
9. Symptomatic employees should be allowed back to work the morning following overnight treatment with 5% permethrin cream or 1% lindane. Disposable gloves should be worn for 2—3 days by symptomatic staff who must provide extensive hands-on care to their patients.[1]

J. **Isolation and Environmental Control for Norwegian Scabies-**

Measures remain in place until skin scrapings are negative on 3 consecutive occasions.

1. Assign patient/resident to a private room.[1]
2. Restrict contact with visitors until treatment regimen completed and scrapings are negative for live mites. Alternatively, visitors must take the same precautions (wearing a gown and gloves) as employees.[1,2,27]
3. Cohort employees to care this patient/resident only (no other direct care responsibilities) until effective treatment is completed. Other duties for these employees can include record keeping and filing.[1]
4. Wear gown and gloves to attend to patient needs, for housekeeping duties and handling of laundry.[28]
5. Spray insect repellent (pyrethins) to wrist (edge of the glove and ribbing of sleeve area), arms and front of gown. Remove before leaving the room. Wash hands.
6. Upholstered furniture covered with cloth fabric should be removed from the room or replaced with furniture covered in plastic or vinyl. Mattresses must be covered with plastic or vinyl.[1]
7. The patient's room should be vacuumed daily with a vacuum cleaner designated for this room alone.[1]
8. Routine disinfection procedures should follow thorough vacuuming on a daily basis and upon discharge of the patient from the room.

9. Utilize any other appropriate protocols such as given in subsections 4—6 under Enviornmental Control for Conventional Scabies.

*The identification of trade names does not imply endorsement by the Missouri Department of Health.

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* Additional information and collection forms for patients, residents or employees are available from the Department of Health (DOH) by contacting the Section of Communicable Disease Control and Veterinary Public Health at (573) 751-6113 or (800) 392-0272).

LINELISTING Problem: _____ Location: _____ Date: _____

Case No.	Name, Address, Phone # or Room #	Age	Sex	Onset Date	Symptoms	Duration of Illness	Predisposing Factors & Hospitalized	# of Scrapings (+ or -)	Date(s) of Scrapings	Treatment	Follow up